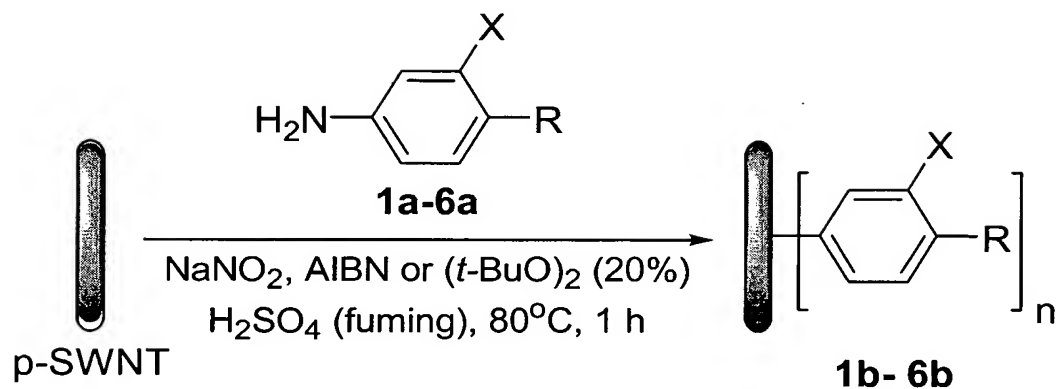**Scheme 1**

1a. R = H, X = H to **1b.** R = SO$_3$H, X = H

2a. R = NO$_2$, X = H to **2b.** R = NO$_2$, X = SO$_3$H

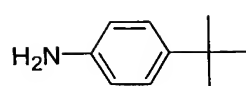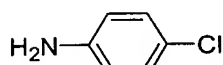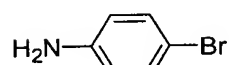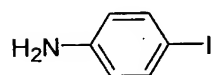**3a.** R = Cl, X = H to **3b.** R = Cl, X = SO$_3$H

4a. R = t-butyl, X = H to **4b.** R = t-butyl, X = H and SO$_3$H (~1:1)[a]

5a. R = CH$_2$CH$_2$OH, X = H to **5b.** R = CH$_2$CH$_2$OH, X = SO$_3$H[b]

6a. R = SO$_3$H, X = H to **6b.** R = SO$_3$H, X = H
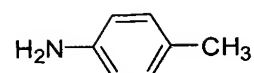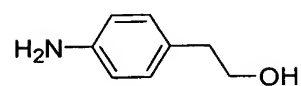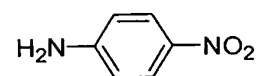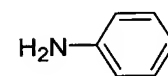
Fig. 1
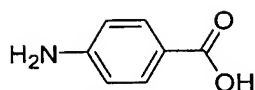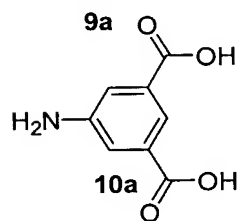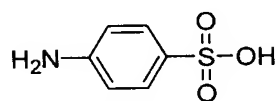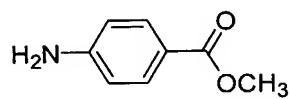
Fig. 2

Scheme 2

SWNT

H_2N —⟨benzene⟩— R

$NaNO_2$, AIBN
H_2SO_4 (fuming), 80°C, 1 h

Water-soluble
Unbundled

Fig. 3

Fig. 4

Fig. 5

Digital Instruments NanoScope
Scan size   10.00 µm
Scan rate   0.9997 Hz
Number of samples   512
Image Data   Height
Data scale   5.000 nm

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

A)

1. 96% H_2SO_4
2. $(NH_4)_2S_2O_8$
3.
H_2N—⟨ ⟩—Cl
4. $NaNO_2$
RT 12 hrs

B)

1. 96% H_2SO_4
2. $(NH_4)_2S_2O_8$
3.
H_2N—⟨ ⟩ $COOH$ / $COOH$
4. $NaNO_2$
80°C 12 hrs

C)

1. 96% H_2SO_4
2. $K_2S_2O_8$
3.
H_2N—⟨ ⟩ $COOH$ / $COOH$
4. $NaNO_2$
80°C 12 hrs
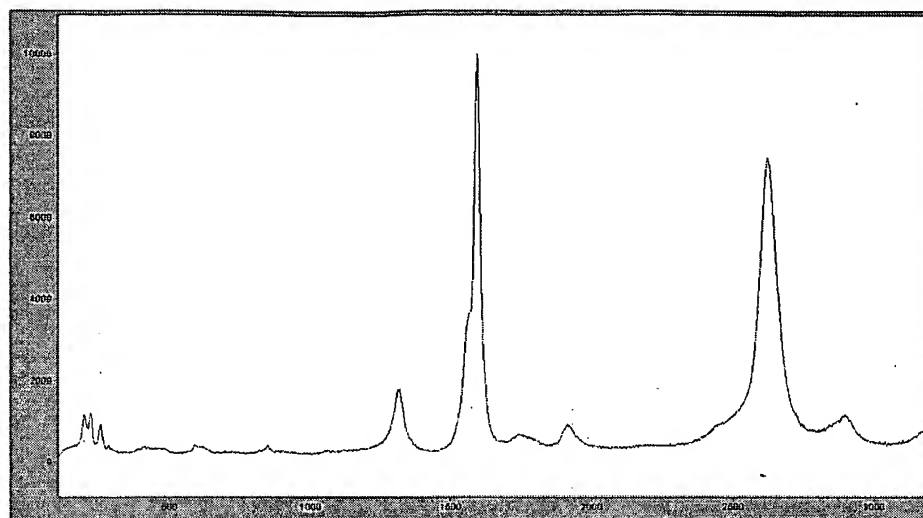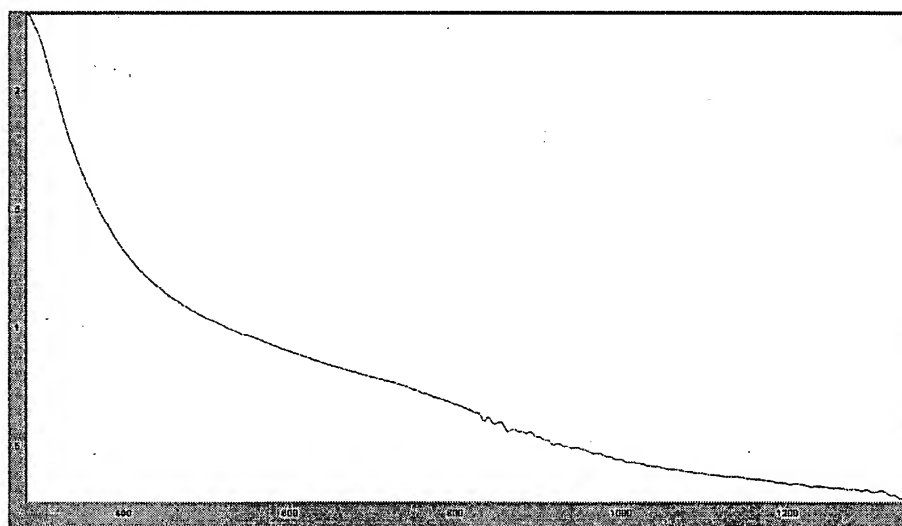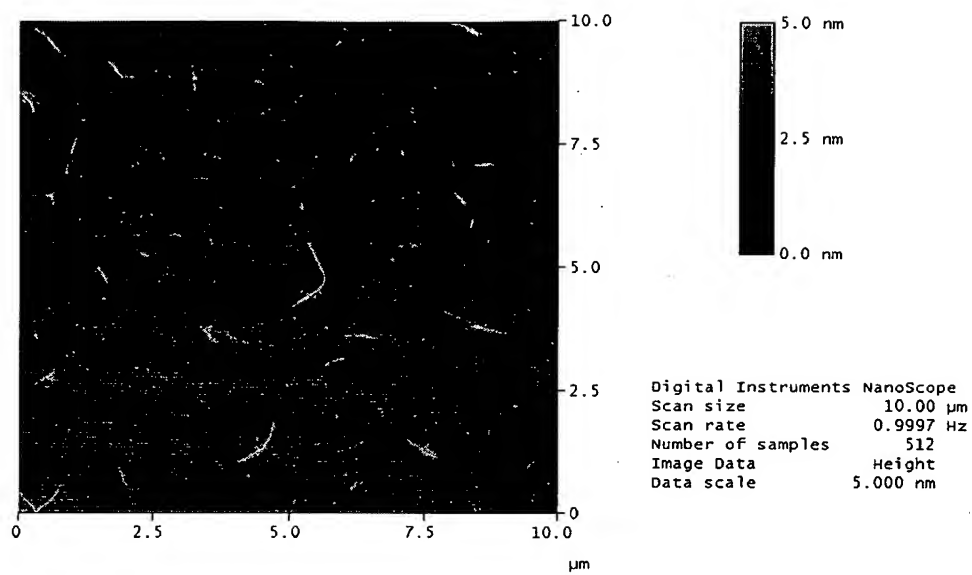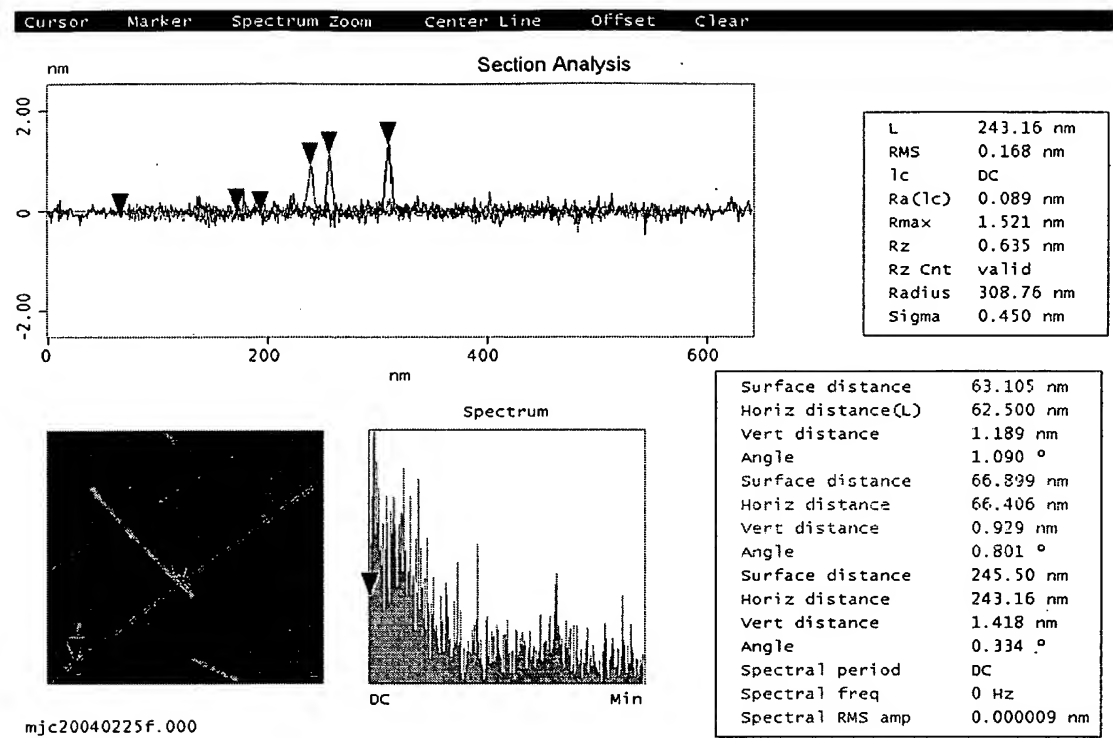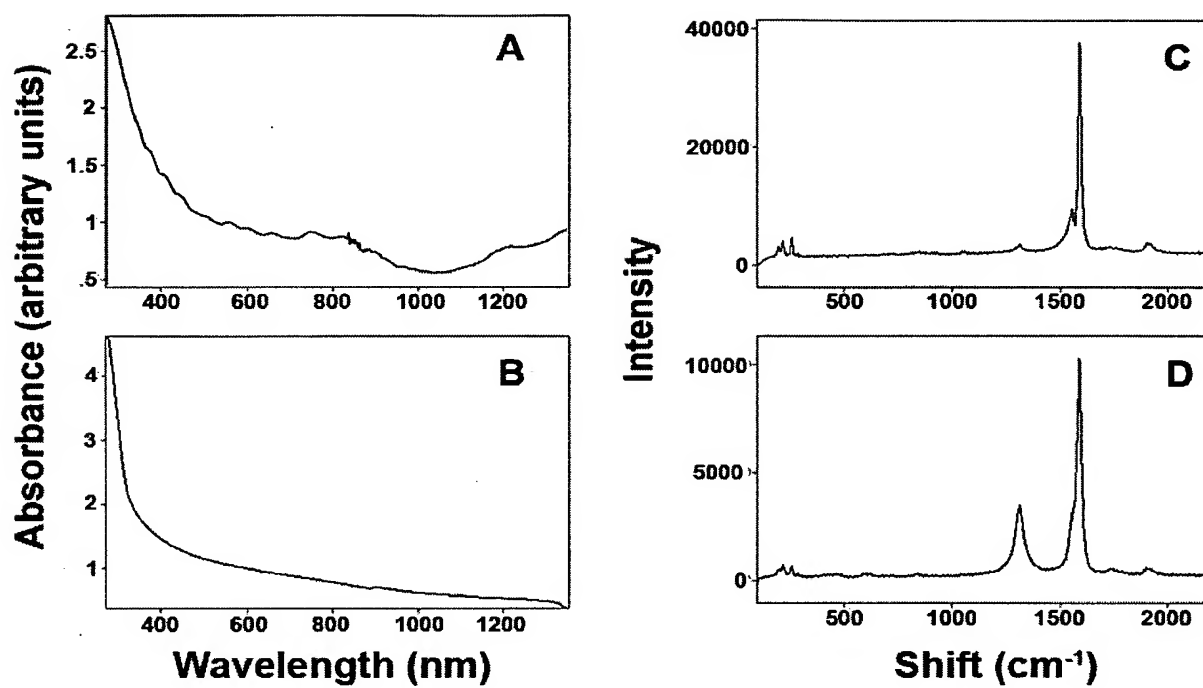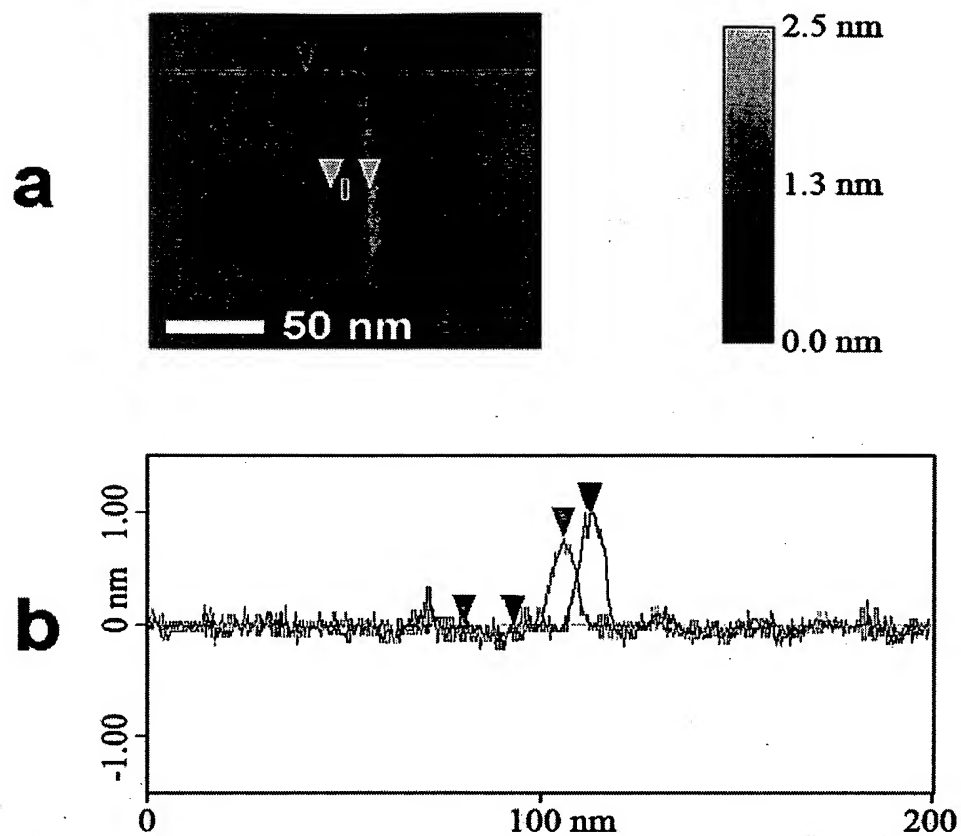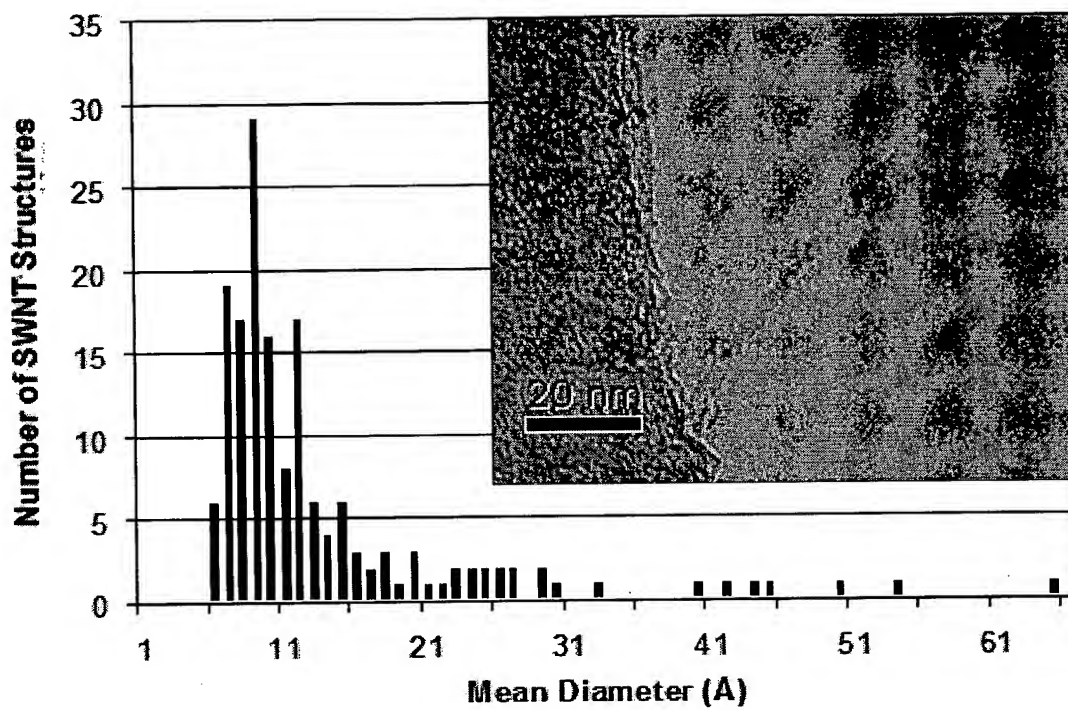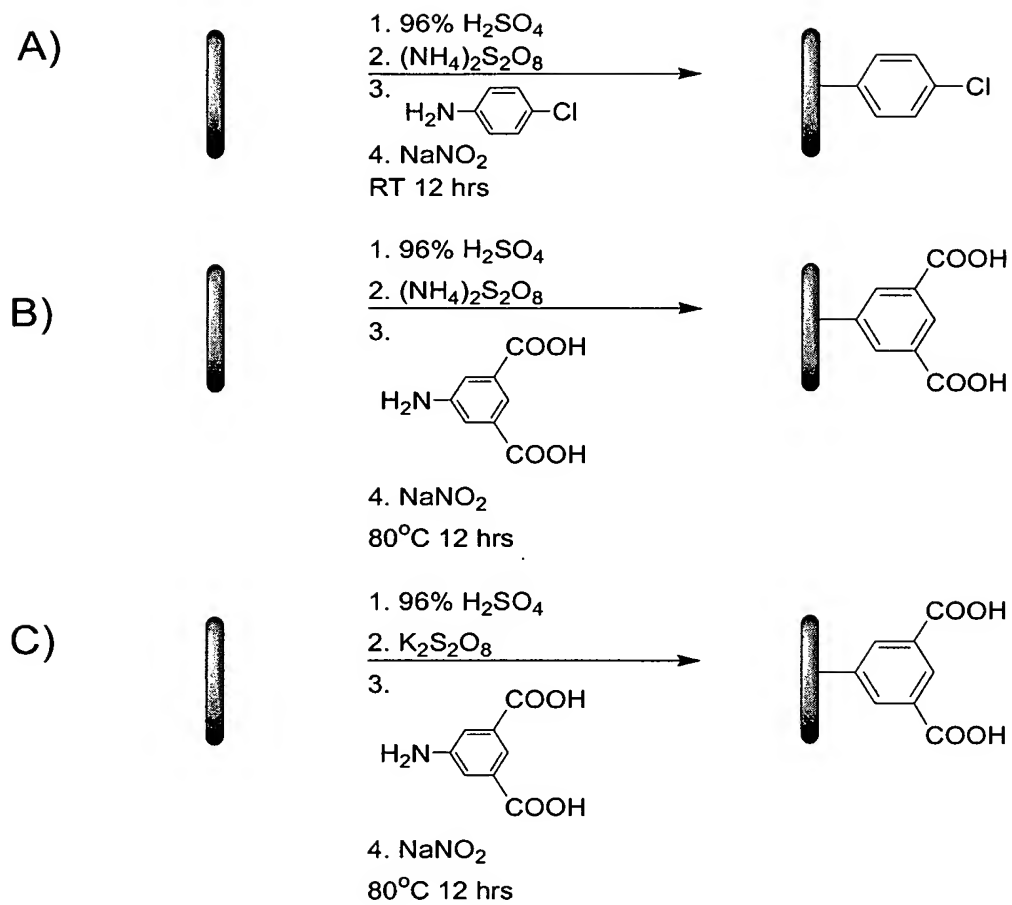
Fig. 11
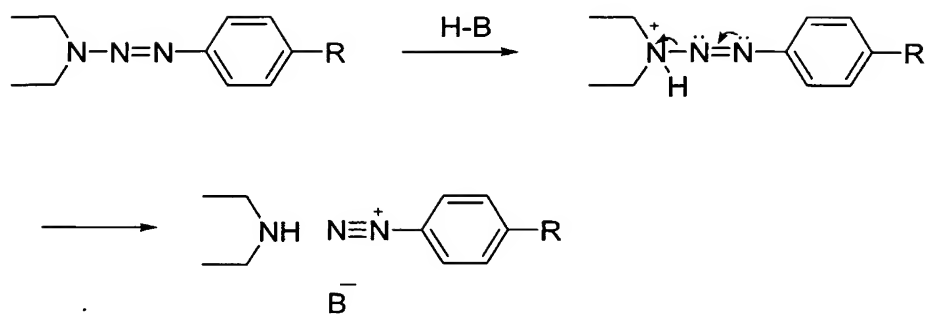
Scheme 3

H-B = Acidic Media

Fig. 12

Scheme 4

SWNT

R = Halogen, Alkyl,
Ester, Amide, Ether

Fig. 13